NIEM Virtual Town Hall

September 17, 2013

Donna Roy:
Thank you everyone for joining me. On behalf of the NIEM Program Management Office, welcome to the NIEM Virtual Town Hall! I believe this is the third Town Hall that we've held. My name is Donna Roy. I am the Executive Director of the NIEM Program. We host these Virtual Town Halls semi-annually to provide a stage to discuss all of the awesome ways our community is using NIEM to advance their missions. We want these stories to connect you with the insights you need to help you along your NIEM journey, wherever that may be!

Joining us for today's Town Hall are Scott Serich, from the IJIS Institute and Joshua Bolin from the National Association of Boards of Pharmacy. Scott and Josh will be speaking about the Prescription Monitoring Information Exchange Architecture, known as PMIX. PMIX is a fascinating example of how data interoperability at the state layer can support mission critical tasks, and I'm really looking forward to their presentation, as well as your questions on their presentation.

Before I kick it over to Scott and Josh, I just briefly wanted to give you some exciting updates on what's happening here at NIEM. First of all, as many of you know, over the past year or thirteen months, the NIEM community has been working really hard on a version of NIEM called NIEM Version 3.0, the next major release of the model. We have just completed our Release Candidate public review. RC is the version right before the last version comes out to the public. Our schemas for version 3.0 are expected to come out mid-month in October.

We're very, very close to finalizing a year's worth of work, and the bulk of that work was done here by you at the community. Active community-level participation was the only way we could get this done. Through your involvement, we believe version 3.0 is going to be the strongest model we've had in the history of the program.

So with that, we'd like to launch 3.0 with an event, a live event called "NIEM in November," taking place at the National Defense University on November 6th. Mark your calendar—November 6th. Some of you may be familiar with the bi-annual National Training Event we have held in the past.

These were in-person training events. We're doing something different this year because of the fiscal constraints in the federal government we all face. NIEM in November will be a day-long, live and virtual get-together for the NIEM community.

This will be the first time we'll get you together in a live event in a way that we used to at the Training Event, but keeps the travel down and the cost for the facilities down. In addition to kicking off 3.0 and some of the other program updates, we'll be discussing NIEM-UML, the unified markup language tool and the specifications; the Geo4NIEM tool, which is our way of bridging the gap between NIEM and the geospatial community; and the recently released Tools Catalog, which is a great way in getting industry to participate in telling us how you are building tools, what tools are you are building, and advertising them to the broader NIEM community. We hope you'll join us for NIEM in November.

We hope to also include a live chat for instant communications with our live audience. We'll have a way for you to ask questions and communicate live back-and-forth. We're really excited to get the community together. I really miss not having a personal event this year. We've worked hard to try to get the event through. It just wasn't possible in this environment. Please join us at the NIEM in November live and virtual event. If you haven't been to NIEM.gov lately, take a moment to browse through there where you'll hear more about NIEM in November.

And lastly, I want to talk about the Best of NIEM awards, my favorite topic. If you know someone who is doing big, bad things with NIEM, really great implementations that you want to help brag about, nominate, or even nominate yourself, this is your opportunity to be a part of the Best of NIEM in 2013. Best of NIEM recognizes NIEM implementation projects that demonstrate how intergovernmental collaboration and innovative technology deliver results. They're really projects that deliver how government works when government works best. These awards are given to individuals or teams in the information technology field for their dedication and commitment to advancing or improving the way NIEM is used for government business.

What do you get if you win a "Best of NIEM" award? You get bragging rights and recognition both in front of your peers at NIEM in November, as well as on the NIEM.gov website. So bragging rights, that's what we can give you. Make sure you submit your projects before the deadline on October 10th. The deadline is October 10th so we can recognize you for the Best of NIEM awards. So start nominating or start passing the word.

So with that you're up to speed on the good things happening with NIEM. I'm going to kick it over to Josh and Scott to talk about PMIX!

Scott Serich:
So this is Scott Serich, and I'll be tag-teaming this with Joshua Bolin of the NABP, and I'm with the IJIS Institute.

So there are a lot of statistics out there that characterize how severe the prescription drug abuse problem has become in the country. You'll have access to the slides later so I'll let you examine the statistics on your own. The bottom line is that the problem is pervasive around the country, and it's a priority for most of the states as well as the federal government. A usage scenario that we considered is grounded in the fact that state-level prescription drug monitoring program (PDMP) record the dispensing of prescription-controlled substances. These are typically pain killers, but not exclusively, typically dispensed from pharmacies, but again, not exclusively. It could be a problem at emergency rooms. Even something as innocuous as a veterinarian. Believe it or not, there are people out there who try to get drugs for their pet and then turn around and abuse them.

Some individuals acquire these drugs to feed their own abuse and others acquire and divert them toward illicit purposes. And unfortunately, many individuals will engage in both behaviors now. I urge if you haven't seen it yet, do a web search for "Oxycontin Express." I believe it's being hosted on Vimeo. It's a one-hour video that was done by Vanguard about the "pill mill" problem that arose in Florida, and I still have to carry a box of tissues with me every time I see it because of the tragic stories contained in this documentary.

Okay, here are some additional statistics characterizing the severity of the problem. In general, among teens the uncertainty and anxiety among teens that ordinarily accompanies the buying of cocaine or heroin on the street isn't there for prescription pain killers that are being taken from somebody's medicine cabinets. So they feel much less inhibited about using these drugs. I don't know all the statistics, but I believe the problem started with people in their 20s and 30s as the primary manifestation, and it's just recently spread to a lot of teenagers, unfortunately.

This map I believe I may have stolen from somebody who had stolen it from someone else. I think the original source is the PMP Center of Excellence at Brandeis University. In any case, the acquisition behavior of obtaining these drugs for bad reasons tends to migrate towards states where the likelihood of unfettered access is the lowest. What this diagram shows is that a study was done on the prescriptions that were written for controlled substances in California and less than 20 percent of those scripts were written for residents of California, which indicated that there are people from out of state who were going to California. We don't know if all 80 percent of that was for illicit purposes, but it really is a tough argument to make that these 80 percent of people all had legitimate needs, and we saw the same phenomenon in Florida and that was the focus of the video I mentioned earlier.
In fact, until recently Florida was a "pill mill" state, and they just stood up their state monitoring program recently. I've heard good news so far that they are making a dent in the rate of increase of stemming controlled substances from these pill mills. It's not just the state PDMPs. There are other organizations that are taking place to fight the problem. But we believe that the state of Florida program to do the monitoring is at least having a deterrent affect if not at least reducing the dispensing for illicit purposes.

So, that's the background to the problem, and I'm going to pass it over to Josh now to run with it.

Joshua Bolin:

Very good. Thank you, Scott. Good afternoon or good morning, depending on what part of the country you're in. Just to outline some of the challenges that prescription drug monitoring programs face, and we'll get in a little bit into what they actually do and how they actually function. These programs are state-run programs, and like so many state governments, they face huge resource challenges and shortages. Due in large part to the Chairmanship of Harold Rogers and the grants that he has I guess helped administer, through the Bureau of Justice Assistance in the Department of Justice, the prescription drug monitoring programs have at least been able to get stood up. There were initial grants to the initial programs established in each state that had authorizing legislature to establish such a program and the growth that has come out of that future enhancement that the PMPs owe a lot of their success to Chairman Rogers and his leadership in Congress. There's also been some funding from the Substance and Mental Health Association. So while there is this initial funding to establish these prescription drug monitoring programs, these PMPs lack ongoing, sustainable funding, and many of them lack technical resources. So that's where organizations like IJIS and NABP have an opportunity to step in and play a critical role in providing some of that technical expertise and infrastructure.

Some other notes about prescription monitoring programs: until 2011, they lacked interoperability. Scott showed that slide that was up on the screen that showed where some of these prescriptions are going. You can see that prescriptions move from state to state, and those that are drug seekers will also move from state to state. So these PMPs, until 2011, weren't interoperable. Some other issues with PMPs are low utilization. These systems, which are most heavily used by health care practitioners, are a system where you are issued a username and password after you reach a certain level of authentication, and then anytime you want to make a given request on a certain patient, you have to log-in, make that request, and wait to get the response back and then wait to analyze that data, at least from a health care perspective. Where that becomes problematic is that is outside the established workflow that doctors, pharmacists, and nurses typically use. So it's not an integrated type of system, and they would argue that they are difficult to use.

The last point that I'll make, and then we'll get into how NIEM played a role, is some of the ways we're trying to address this is that you have an access requirement across state lines. The state legislatures that established this put varying levels of accessibility into place. So, in some states you have different types of health care practitioners who may be able to access. So for instance, in some states, assistants or nurse practitioners don't have the ability to make requests of prescription drug monitoring programs. Also, one of the other significant differences of PMP to PMP is within the law enforcement realm. Some states allow that if a law enforcement officer has an open investigation and can provide a case number, that they can get access to PMP data, whereas there are some states that don't allow law enforcement access at all or require an administrative warrant or subpoena in order to gain access, so that's just kind of a level-set on some of the challenges that prescription drug monitoring programs face.

So now to dig into the PMPs themselves. There are currently 46 operational PDMPs and other than the state of Missouri and the District of Columbia, every state has at least authorizing legislation to establish a PMP. So we are certainly moving in the right direction in terms of getting each state to have an operational PDMP. What these PMPs do is they collect controlled substance history from dispensers. The majority, the vast majority of dispensers are pharmacies—your CVS, your Walgreens—the grocery store, as well as on down to the independent pharmacy. They most report controlled substance data to the central repository to their state or across state lines if they happen to ship drugs outside their state. And as we've noted, those databases which at this point are very much a manual system where you are issued a username and password, you log-in to the system, you make the request, you get the response back, those can be accessed by varying levels of doctors, nurses, physician assistants, those who prescribe medication, as well as dispensers, as in those who dispense medication, which in the majority of cases are pharmacists, although there are prescribers who may dispense from their place of practice.

In addition, law enforcement officers, which as we've noted in certain instances are issued a username and password, can then make those requests to get that data to help inform their investigations into drug seekers where they believe a diversion may be occurring.

So this kind of shows the old way, and prescription drug monitoring programs have kind of been around since the early 20th century. Obviously, the technology has evolved. You have now established the central repositories, which you can see there on the right where PDMPs will get the data from each of the dispensers and will have the data there for the prescribers, the Board Investigator or whomever, to be able make that request. Going back to way back when, the old way, so to speak, the investigator would have to get some sort of warrant-administered subpoena to each of the pharmacies just in their area to be able to get the information that they need to conduct their investigation. So the time savings there is substantial and pretty obvious as well.

What you have on the left, that was basically what the system was up until the time that you have these prescription monitoring programs established within the past couple decades. Now you've got the central repository, and then the next step is through interstate data sharing and integration.

So then moving into the PMIX architecture, and then Scott will talk more about how NIEM played a role, there was a definite need for a standard to facilitate interstate data sharing. While PMPs are more similar than they are different, since the state legislatures that established these programs, you have the potential for 54 different flavors of PMP. So that's where the differences in terms of who can access the prescription monitoring program from a legal standpoint really becomes an issue for the states to need to be able to reconcile that. So that's where the role of PMP InterConnect, which is the hub that my organization administers and runs on behalf of the prescription monitoring programs. That's where those hubs in the PMIX architecture have helped play a role. The PMIX architecture has established that over-arching standard for interstate data sharing and those types of exchanges, these are between PMPs or between hubs, to which PMPs are connected.

So for my last slide, I just wanted to show you where things have progressed with interstate data sharing. As I've noted, PMP InterConnect is the hub-based system that NABP administers on behalf of the prescription monitoring programs that have signed on to use our system. They do use NIEM. NIEM is used as the messaging standard between prescription monitoring programs that use monitoring hubs. So having that data model in place really was significant when NABP entered this space at the beginning of 2010 and 2011, built PMP InterConnect, and stood up the hub in just about 8 months time. Since August of 2011, we now have 16 states that are connected to and using PMP InterConnect. Those 16 states are noted in dark green. The light green states are those states that have executed an agreement to participate in PMP InterConnect and are working on their technical connection. And then you see some green states with diagonal slashes through it, and those are states that are also in the process of reviewing the agreements or moving through some technical sorts of issues. Now obviously you have the other PMPs, which you see Missouri right there in the middle, with the yet to be established prescription monitoring program. Those are all states that may have some statutory limitations or otherwise in process beginning to share and wanting to share data. Many of the prescription monitoring programs, their ability to share may come back to a statutory requirement or again may come back with something you have to address from a legal perspective or a resource perspective to prioritize what's most important.

So yes, 16 states connected now. By the end of next year, we expect to have 15 more connected. As of about a month ago, we had about 2.5 million requests processed through PMP InterConnect. That number is obviously increasing every day. I do apologize for the varying shades of green. Our communications people, bless their hearts, they actually wanted me to present a red and blue state map to denote the various stages, and I had to kind of explain to them, being a government affairs guy, that red states and blue states don't always resonate well to folks when you're presenting well in Washington, DC. So, green is what we have. I apologize for any blurriness there. In any event, that's it for my presentation. I look forward to your questions, and thank you for your time.

Scott Serich:

Thanks, Josh. This is Scott again. So how and where does NIEM fit into the PDMP Information Exchange Architecture? First of all, I need to mention, the IJIS Institute where this was primarily, even I think entirely funded by grants from the Bureau of Justice Assistance (BJA), Office of National Drug Control Policy, and we even got some funding through the Hal Rogers PDMP program that Josh mentioned before that supports the state program.

What NIEM brought to the table for this information sharing effort: first of all, it provided the foundation and the tooling for the PMIX data model. If you want to share information, one of the things you have to agree on is what data are we going to share, and how are we going to represent it in a consistent and replicable manner so that when it gets sent from one state that has its own unique database to another state that has its own unique database, there's a way for them to agree on the format and the meaning of that data. So that was the primary value, and it met that challenge very well.

But skipping down to the fourth bullet, NIEM was also maybe even more than somewhat conducive to consensus-based decision making. We had representatives of the state PDMPs on the steering committee and other interests were also represented and if you have a tool or an approach like NIEM provides, it's pretty straightforward for the stakeholders to understand that we're not going to be able to share electronic information unless we can develop some agreements, develop the data model, the PMIX data model. But that also has a nice spillover effect in that once these stakeholders have gotten together and come together on a consensus on one problem, perhaps they can take advantage of that momentum and establish consensus on other problems. It's not guaranteed, but it provides a somewhat friendly way for these stakeholders to come together on something and then the hope is that they will continue to build on that and agree on other things going forward.

Then the last bullet is something that I suspect many of you are familiar with and that is the network effect economics that ensues when you have something in common in the middle, when you have some sort of hub, not hub in terms of the PMIX model, but hub generically speaking, you have a hub that everyone can subscribe to. You don't need to set up point-to-point arrangements and have translators for each of those point-to-point arrangements. And you've probably seen graphics of if you have fifty states trying to communicate with each other on a point-to-point basis, there are fifty times forty-nine, or a combinatory explosion in complexity and cost and at least when it comes to the data model, NIEM gave us a way to mitigate that cost risk and have a common hub for everyone to focus on for just one data model nationwide.

I've already alluded to some of the benefits of using NIEM, but let me just go ahead and lay them all out. This is probably an abbreviated list as it is. First of all, NIEM provides an orderly approach to providing consensus. A group of stakeholders can sit around a table and have somebody on paper or flipcharts, or nowadays you can even drive it from a laptop and use sophisticated tooling to decide exactly which elements you want to include in an exchange. You don't necessarily get into all the structure at that point, but at least you can come to an agreement on the data itself and what might be included, for example, an appendix to an MOU between the various stakeholders. That's probably the primary benefit on its face.

A secondary bullet in the second bullet is that it provides a non-proprietary third-party focal point. You don't have to pay any royalties to NIEM. It's in the public domain and even better than that, it's grown steadily since we started using it in 2005 when it was actually just one domain, the Justice JXDM Justice Data Model, GJXDM from Global. So it's a very dependable public resource that you don't have to worry about out-of-pocket costs in order to acquire and use it.

On the third item, it sharpens the focus of any issues that may frustrate achievement of the goal of information sharing. And I kind of have to tell a story behind how this works on the PMIX project and many other projects I've worked on here at IJIS. The stakeholders will sometimes use the lack of solving all the problems on the technical side as an excuse, for lack of a better term, for not tackling the problems on the policy side. So having a tool like NIEM that makes it easy to

solve the problem of having a common data model allows the stakeholders to go, "Okay, we can't continue to say we're not making progress because the technology isn't there yet." For NIEM data modeling, the technology arrives pretty quickly and then we can get to the sort of get back to the harder problems of what are our policy differences and what do we need to do to resolve them. I've seen this on several projects since I've left the PMIX project, which was my primary duty, and taken on other projects. I've seen exactly the same phenomenon, and I'm going to try exactly the same strategy to try to use cooperation surrounding the data model as getting a foot in the door to resolve some of the policy differences.

The fourth item, perhaps just as important as sharpening the focus, is that the exchange partners under the NIEM exchange approach retain control of their data at rest. That's a big one. If you give it up to somebody else, there are all sorts of legal issues that get raised. There are control issues, but each state owns its own database and only releases data, discloses data to a requesting state on a request-by-request basis. And the authoritative data at rest stays within the control of the state. I don't think the project would have gone anywhere if that were not the case.

Next, each transaction commences from a non-interoperable starting point. That just highlights the point that Josh mentioned earlier, that you have 54 different potential database designs and none of them are exactly like the others, so we need to have a strong way to represent how are we going to code the data and get it shipped over the wire in a way that everyone can agree to so that there are no surprises when a transaction is sent in an exchange.

The NIEM data models tend to be scalable. If you're not familiar with NIEM, it consists of a core, XML-coded core, and many domains; I think it's up in the double-digits in terms of domains, and if you can't find what you want in all of that, you can extend it. That's the X in XML for extensible and we took advantage of that for the PMIX project. There wasn't a whole lot in NIEM or before that, in GJXDM that we could borrow so we just built our own. I've seen that some of the individuals who were involved in the early phases of the project are on the participant list here—I won't embarrass them by calling out their names—but I 'll just send out a thank you to everyone who participated in bringing these accomplishments to fruition.

Let's see, the sixth, seventh bullet: no need for one-off point-to-point data modeling. I mentioned that earlier that you don't have to put up with a combinatory explosion of point-to-point solutions.

Next to last bullet, NIEM utilizes what I call modern self-describing XML, and that's in contrast to the state reporting standards. When pharmacies report data to the states they use a variation of HL7 bars and hats. I actually went through NCPDP, and then an organization called ASAP, and that's hard to read. Back in the days when bandwidth wasn't ubiquitous we needed to have efficient coding, but nowadays we prefer self-describing data models.

And then finally, NIEM tooling was well-established. The support was there. We had the help desk. We had lots of training available. There was plenty there for us to do our job and now with

the NIEM-UML profile and the products and systems coming out that implement that profile, it's even easier. I have started using one of the tools, and it's a bit scary how easy it is to use the tool. Easy is probably not the right word, but the fact that somebody with my capabilities can be able to develop real IEPDs from scratch if necessary is quite a testament to how far the toolset has come, and I would encourage everybody to explore that toolset.

Look's like we have some time for me to briefly go into the technology. I had a version of this diagram that was an obvious patchwork of Vizio icons and somebody has dressed it up to look more professional, so I appreciate that, but this is a Post Office metaphor for the PMIX architecture and the NIEM data model that roughly corresponds to the vocabulary and the grammar and the semantics of the language that you could use to write a letter. And on the left side of the diagram, you got a letter being stuffed into an envelope and that's where the NIEM data standard would apply. And then if you fast forward all the way to the right side, the envelope is received by the other party in the transaction and they are able to read the letter.

The NIEM transport model roughly corresponds to the Postal System, so we've got a Postal System in the middle. You drop the envelope inside a mailbox, which corresponds to the Global Reference Architecture Services Standard. And once it gets into the system it potentially goes through intermediate sorting facilities all the way to the right side of the diagram, and we have another interface where the receiving mailbox gets that letter and makes sure it is securely placed in the mailbox where the recipient can go fetch it. The intermediate sorting facilities correspond to the hubs that Josh mentioned earlier.

And then some additional tools that make this all work. We have a public e-infrastructure set up and a directory that goes along with it. That's represented at the top of the diagram. And the stoplight doesn't quite work in the Post Office metaphor, but we included it just to represent the fact that we may be able to intercept some requests that are going to states that don't allow those requests from the requesting states. So we've got some intelligence that can be built into the hubs that can do things like filter out requests that are unauthorized and a lot of other things. Part of the reason that we went with a hub-oriented execution context or a topology or physical infrastructure, whatever label you like, is to enable the PMIX community to take advantage of intelligence that can be loaded on these intermediaries so the burden wasn't entirely on the periphery of the PMIX infrastructure.

All right, some of the lineage of the PMIX data model. I mentioned it before—it kind of grew, although we weren't aware of it at the time. It started with HL7 version 2, the old EDIX.12 type encoding of health data and the NCPDP extension of HL7 was the starting point, and then ASAP, the American Society for Automation in Pharmacy, did a carve-out of NCPDP, identifying just the subset that would be used for reporting data from the pharmacies to the state databases. And the states were very involved in that process—this was before the IJIS Institute involvement came along. And what we did was take the latest available ASAP standards that were around at the time and used that to build our PMIX extension schema. So what was in the databases were

pretty well represented in the ASAP standard, but we didn't want to use that standard because it was old technology. We wanted XML technology that NIEM provided, and we just used the standard NIEM extension technique to take what wasn't available in the core and the domains of NIEM and go ahead and build our extension schema and went from there. We got some of the dates on the arrow, and I'll let you take a look at those on your own convenience.

I'm obviously a big fan of NIEM and even in retrospect, now that I've been separated from that project for, what is it, nine months now, since the beginning of the year, I look back and this may have been the single most important technical achievement coming out of PMIX was this common data model—the fact that the states agreed to the model, and we didn't have anybody stand up and say, "No way." We did have some lively debates along the way about other matters, but this seemed to be an area where consensus was reached and all the states agreed—knock on wood, hoping it stays that way as we move into the future.

That's all I have, so it looks like we're able to turn it back to you with time leftover for question and answer.

Arjun Verma:
Thanks, Scott, and just as a reminder, if you have a questions, just type it into the chat box and ask it to Scott and Josh as well as Donna, if you have any questions related to NIEM specifically.

So, we've had a few questions through the chat box and from our information@NIEM.gov prior to the event. First question, Scott and Josh, is the PMIX IEPD readily available? We've had a few questions around, if someone is looking to use that, is that available publically?

Scott Serich:
Yes, this is Scott. It's been posted publically on NIEM.gov in the Clearinghouse. If you don't want to fetch it piecemeal, you can get in touch with me via email and I'll have the Project Manager here at IJIS send you a copy of the zip file that packages everything together.

Arjun Verma:
Another question that we've had is "how does someone know that their state solution is PMIX conformant?" So, if a new a state wants to join, what you guys are doing, how would they know their solution is conformant with PMIX?

Joshua Bolin:
I can take a swing at that one. Most of the prescription monitoring programs aren't necessarily becoming PMIX conformant themselves but instead, what is happening is that the hub they are using for interstate data sharing is becoming PMIX conformant. While I believe, and Scott, you can correct me on this, the PMIX architecture has been constructed in such a way that the individual states could go through PMIX architecture compliance, because of the software that they happen to be using, or because of just resource limitations, a lot of them, the majority of them, have made the

decision to just connect to a hub that is going through PMIX architecture compliance as opposed to doing it themselves. I think the architecture does lend itself to a state-specific compliance process, I'm just not sure how viable it is for a state to go through that when they have a hub that can do the same thing that they would try to do point-to-point themselves.

Scott Serich:
If any state is interested, we have a new program at IJIS called Springboard, which does provide conformance testing by an independent third party. And we actually had two interfaces built in, one for if a state wants to plug into the PMIX infrastructure directly in the ordinary vanilla sense of the word, then we have a test for that. We also have hub-to-hub testing—a little bit unique to PMIX. It's not the ordinary way of plugging into a service oriented architecture, but it's there nonetheless for the reasons Josh mentioned. Sometimes the hubs are taking care of at least part of the interfacing with others so we have that conformant test in Springboard.

And if you don't want to go through Springboard, you could also just find a state that has successfully implemented, test with them, and the fact that you can interoperate with one is usually at least an initial vote of confidence. It isn't quite as confident as you would be going through a formal Springboard conformance test, but it will give you an initial vote of confidence that you're on the right track. And if you could do that with all the other states, you could have exactly what you need, what you're searching for. There are couple different paths with regard to that.

Arjun Verma:
And just one note on that, the IEPD Clearinghouse can be found on **NIEM.gov/tools**.

Another question that we've had, based on the PMIX project, was there an expansion into one or more NIEM domains? So that is, was there any additional vocabulary integrated into NIEM through PMIX?

Scott Serich:
I'm not aware of any. There has always been talk of just taking the extension schema and submitting it to somewhere. Maybe the most likely home now is the new NIEM Health Domain. It's a public asset so as soon as the Health Domain is ready to consume it, we're sort of ready to feed it. I think that would be the most natural home, unless a separate prescription domain arises on its own. I would think that would be the place that it would be housed. We're waiting sort of for the demand to arise so that we can service that request to include the extension schema.

Arjun Verma:
Again, another technical question: how many IEPDs or extensions are there through PMIX?

Scott Serich:
Just one IEPD with just one extension schema in it. And it's relatively, if you look at some of the other IEPDs that are out there, it's a relatively modest one. I suppose if you're not interested in

PMIX but you want to learn about NIEM using a relatively small instance of an IEPD, I would go get one of these NIEM-UML based profile tools and reverse engineer the PMIX IEPD into it and you'll get the corresponding UML data model that goes with it.

Arjun Verma:
So next question: how did the PDMP community structure its identity and privilege management?

Joshua Bolin:
So, in terms of identity and privilege management, going back to some of the things I addressed in the slides, each state legislature passes the statute that provides the framework upon which a prescription-monitoring program is going to be established. Within that, there may be specific requirements that dictate how they validate that yes, this is the person that they say they are and yes this person has the credential or the particular role to be able to make this request. So that can vary from a state to state basis. One of the approaches that NABP has taken with PMP InterConnect is actually using Scott's metaphor for the envelope itself will actually take not the identity as in the name but the role of the requester as well as the state in which the requester resides on the outside of that envelope which allows PMP InterConnect to reconcile whether or not that particular role has the ability to access the data in the disclosing state, so to speak.

So, in the instance of Indiana and Ohio, if a physician assistant in the state of Ohio were to make a request, that request would come through PMP InterConnect, it would see if the physician assistant, identifying her PII or PHI on the outside of the envelope so to speak, InterConnect would do its work and reconcile and it would stop and say, you know what, physician assistants don't have the ability to access data with the Indiana prescription drug monitoring program, so we're going to reject this request at the hub level.

So, that's one of the ways from an interstate data sharing perspective that the hubs can play a potential role there. When it comes to the identity at each PMP level, some states require some level of a notarized statement, some states will work closely with the professional licensing board of pharmacy or the board of medicine to validate the person's identity and that they are a licensed practitioner of pharmacy or medicine. So really it does vary on a state by state basis, but the hubs do have a role to play and it's been a fairly successful role so far in reconciling because there have been compendiums provided to each of the prescription drug monitoring programs and those compendiums contain our sort of crosswalk of who has access in a given state and then the PMPs will populate a matrix within PMP InterConnect that helps set up the rules engine for how they will use and interact with the other prescription monitoring programs that use that hub.

Scott Serich:
Once a user in a state is vetted to access the intra-state system, it's complete trust after that. There are no login credentials that pass from one state to another. As Josh mentioned, there are roles and perhaps other data closed in the transaction, in the request transaction, outside the encrypted payload and that's about the extent of filtering so that it's a very highly trusting environment. One

state will trust another state's vetting process and about the only recourse process if there are any problems is you can go look at logs and find out who made a particular request. There's enough back information to backtrack it and find out if there was an inappropriate request. We haven't even broached the subject of things like SAML Assertions and stuff like that. Hopefully, we'll broach it sometime, but not yet.

Arjun Verma:
Another question we've had a few people ask about is what level of integration is there between PMIX and state health exchanges?

Joshua Bolin:
Through some of the sponsorship with the awesome Office of the National Coordinator for Health Information Technology, because that's what we need in the federal government is just more acronyms, they with HHS, SAMHSA, ONDCP, BJA sponsored a round of pilots that sought to try to integrate PMP data directly into the healthcare workflow. PMP InterConnect was a participant in I believe four to six of those pilots that actually had these healthcare entities plugging into our hub and then making a request through the hub to be able to get PMP data out of the prescription monitoring program.

One of the difficulties, and again just coming back to resources, is you have at the PMP level they lack a lot of the technical infrastructure or expertise to be able to build those interfaces themselves or even host those interfaces. Our hub has kind of become, while it was initially built to just be an interstate data sharing hub, it's now expanded to also serve as a way to integrate data directly into the healthcare workflow.

One of the use cases was with a health information exchange based in Indiana and that health information exchange worked with one of their local hospitals in the Indianapolis area. They would make a request just as if they were a prescription monitoring program to PMP InterConnect, we would route their request, get the response back, and then return the XML to them for them to turn it into something that they can actually use within HL7 or NCPDP or things like that.

PMIX itself and the architecture itself is going to have to evolve to be able to account for widespread transactions like that, and I believe that's something NABP I hope and believe is going to lead the way for that type of discussion because as much as we've heard healthcare likes interstate data or multistate date through their current manual interface of logging in, making the request and getting the response back, what healthcare really wants is data integrated directly into their workflow because that means they can spend that much more time with the patient, that they can spend that much more time reviewing critical clinical data.

One of the things we have heard, however, is that health care, while you've got the fifty-plus prescription monitoring programs that do speak NIEM, health care by and large have their own languages that they have been speaking, their own data models that they have been using for

sometime. So there's reconciling NIEM to HL7, NIEM to NCPDP 10.6 because trying to compel health care to change the way that they message is a significant issue. So that's one of the areas where we're working through some things with health care and with the prescription monitoring program to come up with a solution that can widely spread PMP integration into the health care workflow.

Scott Serich:
I broached the subject of perhaps creating an XML translation style sheet with Health Information Designs, which is one of the vendors in this space and they said, you know, the dataset is so small, it probably wouldn't be worth running any transaction that's coded in PMIX through this translation and coded in NCPDP 10.6 or something similar. They said they can just handle it internally and no need for it. We stand ready to do that project if the need ever arises but so far it seems like not such a huge deal and I suspect the way it's going to shake out is that some of the providers are just going to say, look there are different communities that we serve and we're going to have to be multi-lingual until some of this harmonization work takes place down the road.

Arjun Verma:
Another question is, is there a detailed and technical PMIX case study available? Specifically, does that include PDMP-required terminology and how PDMP terminology is represented and structured in its data model? Jumping off that, was there a logical data model developed prior to developing a NIEM-conformant data model?

Scott Serich:
Yes, we built a data model using an open source tool, or it might have been freeware—I can't remember—called ArgoUML, and it wasn't bad, but if you asked us to do the same task today I would grab one of the tools that implements the NIEM-UML profile and get a lot more capabilities than ArgoUML had.

The IEPD has diagrams in it from that old effort. I don't know if they're up-to-date. If you want a truly authoritative rendition of the model, I would do what I suggested before: grab the zip file containing the IEPD and reverse-engineer it into one of these tools.

Arjun Verma:
And the last question is how do I get a copy of those slides? For those of you looking for the slides themselves, we'll be posting these as well as the audio from the event itself on NIEM.gov as soon as they are 508 compliant. But we'll be posting those very shortly.

And with that I'll kick it back over to Donna.

Donna Roy:
On behalf of the NIEM program, I wanted to thank everyone attending with us today to listen to the stories. Scott and Josh, thank you very much for helping us get the word out. Definitely a little bit

of NIEM enthusiasm there, and I love that. Congratulations on getting 16 states connected, and I'm looking forward to hearing the status of when those last 15 are done. Not last 15, but the next 15; that's 31 states, and that's awesome progress one of the big social issues which is drug diversion in particular affecting our teens right now.

I hope you found this presentation beneficial and it was a good use of your time. I hope that it helps you. If you have any follow-up questions, you can send us an email at **information@NIEM.gov** or you can visit our website and interact with us there. So, I want to thank you again, and I hope you have a great afternoon.